CLAIMS

What is claimed is:

1. A stator for an electric motor, the stator comprising:

a core having first and second ends and a plurality of radially disposed slots extending between the first and second ends;

a first plurality of concentric coil groups disposed in the slots, the first plurality of coil groups each comprising a plurality of coils having leads exiting the stator core at the first end thereof; and

a second plurality of concentric coil groups disposed in the slots, the second plurality of coil groups each comprising a plurality of coils having leads exiting the stator core at the second end thereof;

wherein the first and second pluralities of coil groups are configured to define four poles for receiving three phase alternating current.

2. The stator of claim 1, wherein the first plurality of coil groups are disposed in the slots to define a first two poles, and the second plurality of coil groups are disposed in the slots to define a second two poles

3. The stator of claim 1, wherein each coil group includes four coils.

4. The stator of claim 1, wherein each coil group includes at least one coil of a first cross-sectional area disposed singularly within a respective slot, and at least one coil of a second cross-sectional area smaller than the first cross-sectional area disposed within a respective slot shared with a coil of another group.

5. The stator of claim 4, wherein each coil group includes two coils of the first cross-sectional area disposed singularly within respective slots, and two coils of the second cross-sectional area disposed within respective slots shared with coils of other groups.

6. The stator of claim 4, wherein within each group, the coils of the first cross-sectional area of each group are disposed in slots circumferentially outside slots in which the coils of the second cross-sectional area are disposed.

7. The stator of claim 4, wherein coils sharing slots and exiting at the first end of the stator core are disposed in radially outer positions of the respective slots, and coils sharing slots and exiting at the second end of the stator core are disposed in radially inner positions of the respective slots.

8. The stator of claim 1, wherein the coil groups are disposed in an order of A1, B4, C2, A3, B1, C4, A2, B3, C1, A4, B2, and C3, where A, B and C represent alternating current phases, and 1, 2, 3 and 4 represent respective coil groups of each phase.

9. The stator of claim 8, wherein the stator core includes 72 slots and each coil group includes 4 coils.

10. The stator of claim 8, wherein coil groups A1, B4, C2, A2, B3 and C1 have leads exiting at the first end of the stator core and coil groups A2, B3, D1, A4, B2 and C3 have leads exiting at the second end of the stator core.

11. A stator for an electric motor, the stator comprising:

a core having a plurality of radially disposed slots extending between first and second axial ends thereof; and

coil groups disposed in the slots in an order of A1, B4, C2, A3, B1, C4, A2, B3, C1, A4, B2, and C3 configured to define four poles for receiving three phase alternating current, where A, B and C represent alternating current phases, and 1, 2, 3 and 4 represent respective coil groups of each phase.

12. The stator of claim 11, wherein a first half of the coil groups have leads exiting the respective slots at the first end of the stator core, and a second half of the coil groups have leads exiting the respective slots at the second end of the stator core.

13. The stator of claim 12, wherein the first half includes coil groups A1, B4, C2, A3, B1, and C4, and the second half includes coil groups A2, B3, C1, A4, B2, and C3.

14. The stator of claim 11, wherein each coil group includes at least one coil of a first cross-sectional area disposed singularly within a respective slot, and at least one coil of a second cross-sectional area smaller than the first cross-sectional area disposed within a respective slot shared with a coil of another group.

15. The stator of claim 14, wherein each coil group includes two coils of the first cross-sectional area disposed singularly within respective slots, and two coils of the second cross-sectional area disposed within respective slots shared with coils of other groups.

16. The stator of claim 14, wherein within each group, the coils of the first cross-sectional area of each group are disposed in slots circumferentially outside slots in which the coils of the second cross-sectional area are disposed.

17. The stator of claim 14, wherein coils sharing slots and exiting at the first end of the stator core are disposed in radially outer positions of the respective slots, and coils sharing slots and exiting at the second end of the stator core are disposed in radially inner positions of the respective slots.

18. The stator of claim 11, wherein the stator core includes 72 slots and each coil group includes 4 coils.

19. A stator for an electric motor, the stator comprising:

a core having a plurality of radially disposed slots extending between first and second axial ends thereof; and

a plurality of coils disposed as set forth in Table 2.

20. A stator for an electric motor, the stator comprising:

a core having first and second ends and a plurality of radially disposed slots extending between the first and second ends;

a plurality of concentric coil groups disposed in the slots, each coil group having leads exiting at an end of the stator core opposite from that of a circumferentially successive coil group, the coil groups configured to define four poles for receiving three phase alternating current.

21. The stator of claim 20, wherein each coil group includes four coils.

22. The stator of claim 20, wherein each coil group includes at least one coil of a first cross-sectional area disposed singularly within a respective slot, and at least one coil of a second cross-sectional area smaller than the first cross-sectional area disposed within a respective slot shared with a coil of another group.

23. The stator of claim 22, wherein each coil group includes two coils of the first cross-sectional area disposed singularly within respective slots, and two coils of the second cross-sectional area disposed within respective slots shared with coils of other groups.

24. The stator of claim 22, wherein within each group, the coils of the first cross-sectional area of each group are disposed in slots circumferentially outside slots in which the coils of the second cross-sectional area are disposed.

25. The stator of claim 22, wherein coils sharing slots and exiting at the first end of the stator core are disposed in radially outer positions of the respective slots, and coils sharing slots and exiting at the second end of the stator core are disposed in radially inner positions of the respective slots.

26. An electric motor comprising:

a housing;

a rotor disposed for rotation within the housing; and

a stator, the stator comprising a core having first and second ends and a plurality of radially disposed slots extending between the first and second ends, a first plurality of concentric coil groups disposed in the slots, the first plurality of coil groups each comprising a plurality of coils having leads exiting the stator core at the first end thereof, and a second plurality of concentric coil groups disposed in the slots, the second plurality of coil groups each comprising a plurality of coils having leads exiting the stator core at the second end thereof, wherein the first and second pluralities of coil groups are configured to define four poles for receiving three phase alternating current.

27. The motor of claim 26, wherein the leads are channeled within ends of the housing adjacent to respective ends of the stator.

28. The motor of claim 27, wherein the leads exit the housing through an aperture formed in the housing.

29. An electric motor comprising:

a housing;

a rotor disposed for rotation within the housing; and

a stator comprising a core having a plurality of radially disposed slots extending between first and second axial ends thereof, and coil groups disposed in the slots in an order of A1, B4, C2, A3, B1, C4, A2, B3, C1, A4, B2, and C3 configured to define four poles for

receiving three phase alternating current, where A, B and C represent alternating current phases, and 1, 2, 3 and 4 represent respective coil groups of each phase.

30. An electric motor comprising:

a housing;

a rotor disposed for rotation within the housing; and

a stator comprising a core having first and second ends and a plurality of radially disposed slots extending between the first and second ends, a plurality of concentric coil groups disposed in the slots, each coil group having leads exiting at an end of the stator core opposite from that of a circumferentially successive coil group, the coil groups configured to define four poles for receiving three phase alternating current.

31. An electric motor comprising:

a housing;

a rotor disposed for rotation within the housing; and

a stator comprising a core having a plurality of radially disposed slots extending between first and second axial ends thereof, and a plurality of coils disposed as set forth in Table 2.